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(71) Applicant(s)	Joseph Frederick Fritsch 114 Lansdowne Park, Ballsbridge, Dublin 4, Ireland	(56) Documents Cited GB 1490024 A US 4947505 A
	Roxanne Yvonne Fritsch 114 Lansdowne Park, Ballsbridge, Dublin 4, Ireland	(58) Field of Search UK CL (Edition L ) A4F INT CL <sup>5</sup> G11B 3/58 Online databases: WPI
(72) Inventor(s)	Joseph Frederick Fritsch Roxanne Yvonne Fritsch	
(74) Agent and/or Address for Service	Mewburn Ellis 2 Cursitor Street, LONDON, EC4A 1BQ, United Kingdom	

**(54) Compact disc cleaner.**

(57) A compact disc cleaning device (1) comprises a housing (2). Two semi-annular brushes (8) are carried on a circular carrier disc (23) which is releasably secured to a circular carrier member (14) rotatably supported on a support plate (10) secured to the housing (2). A releasable cover (42) protects the brushes (8). A spigot (46) extending from the cover (42) carries a permanent magnet (48) for releasably engaging a plate (49) of magnetic material secured to the carrier member (14).

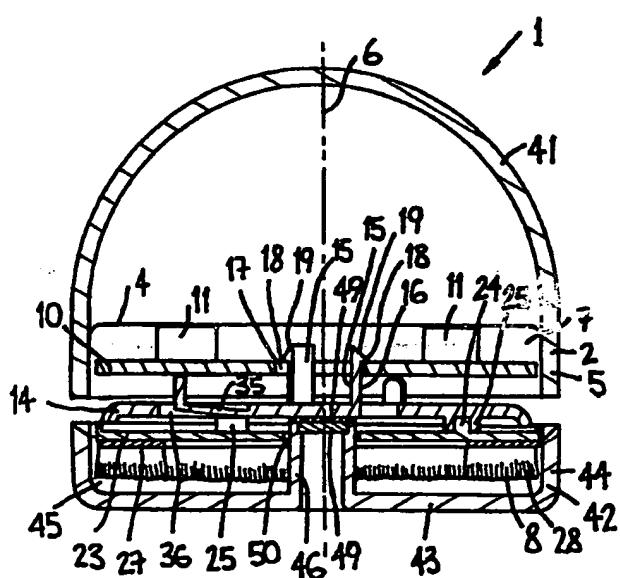
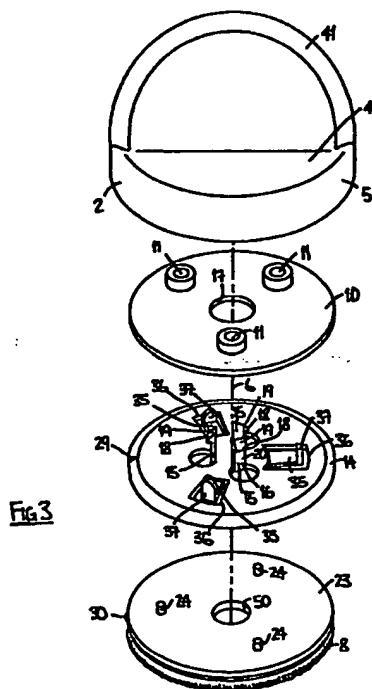
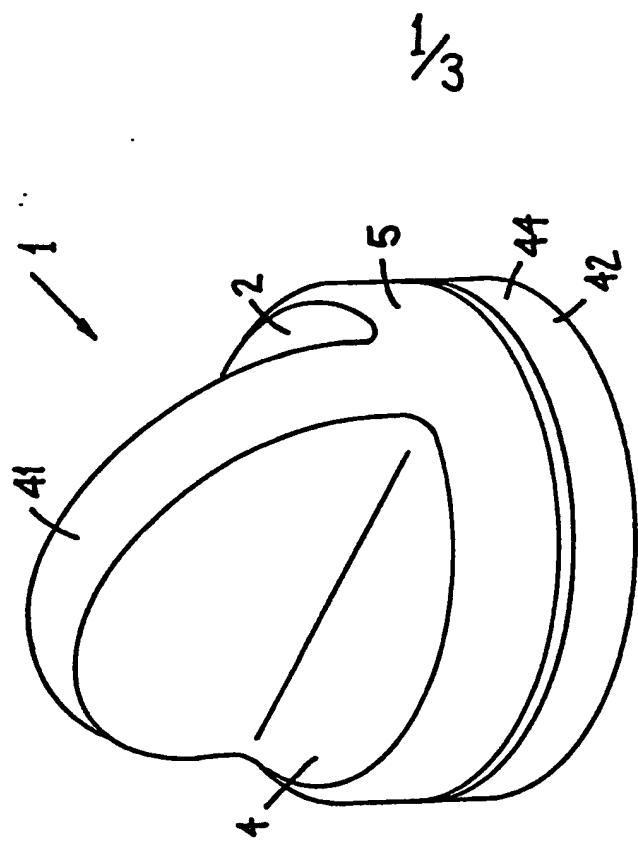


Fig 2



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**At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.**



FIG

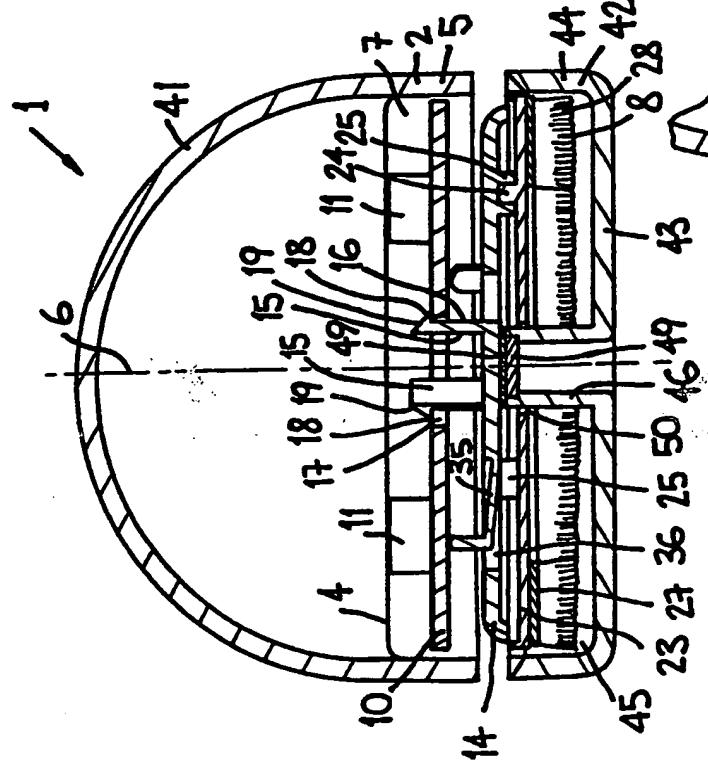
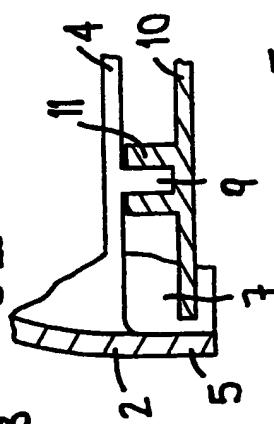
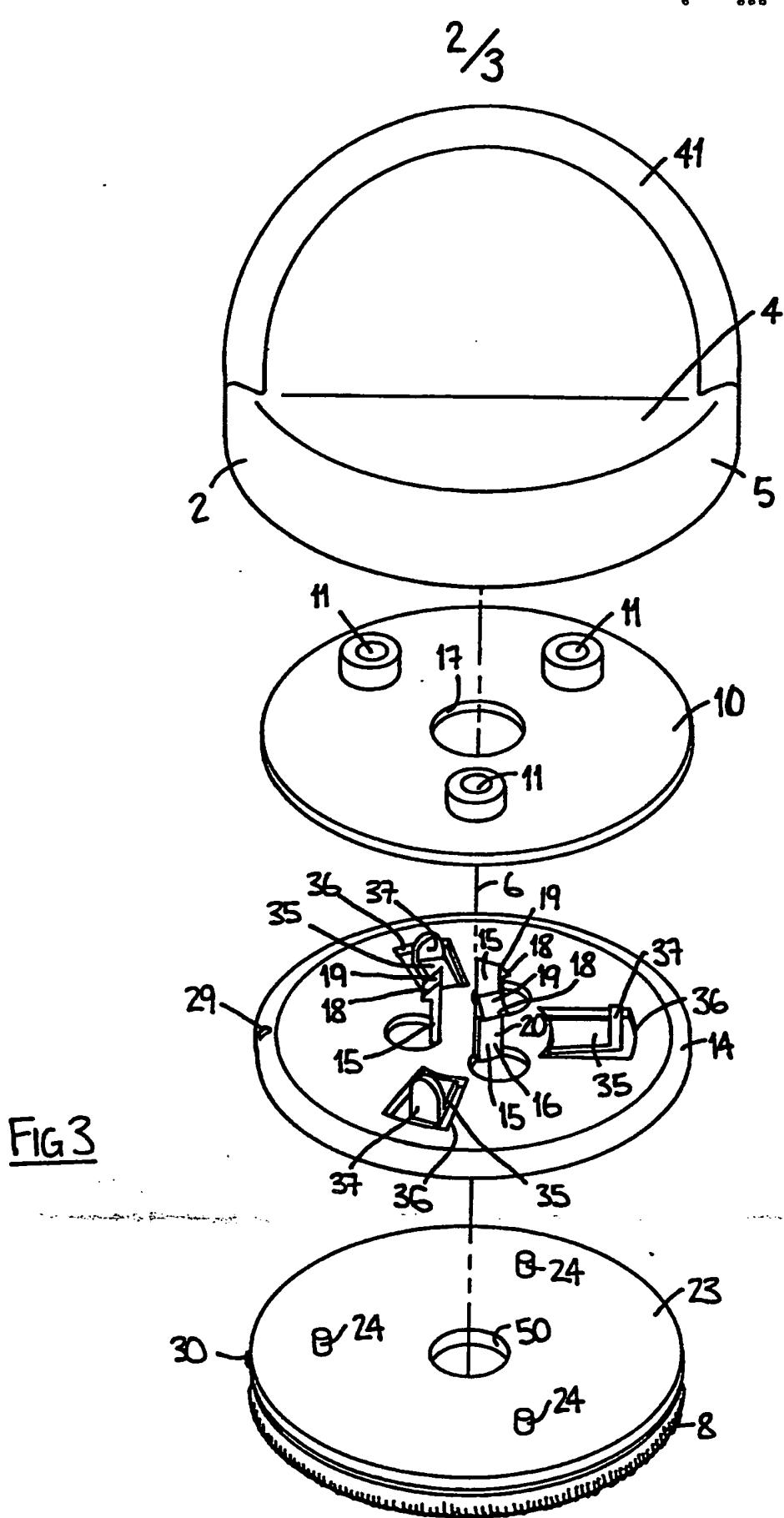


Fig 2



8  
Fig



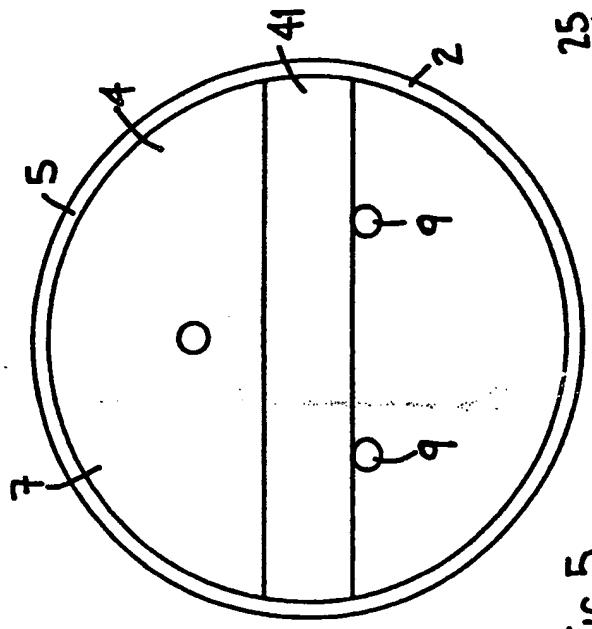


FIG 5

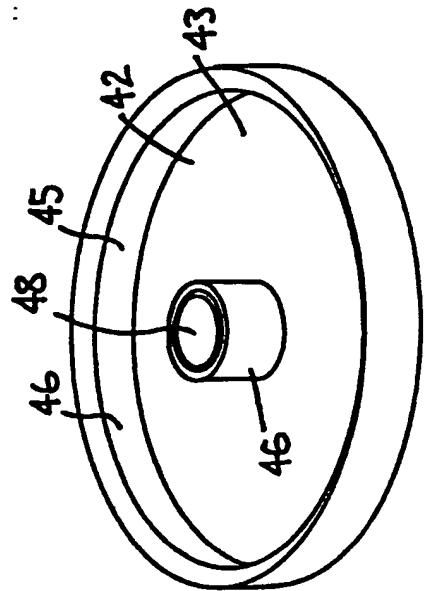


FIG 4

3  
3/3

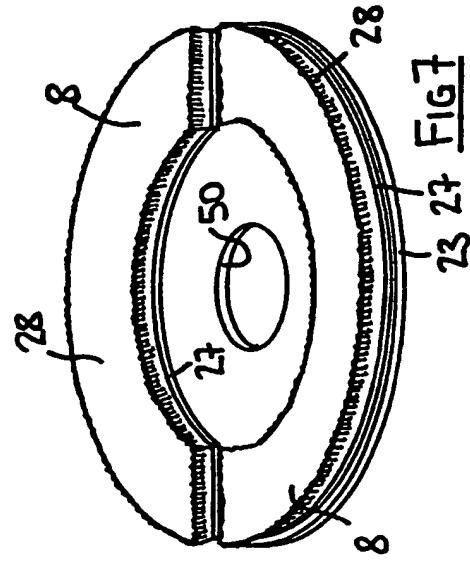


FIG 7

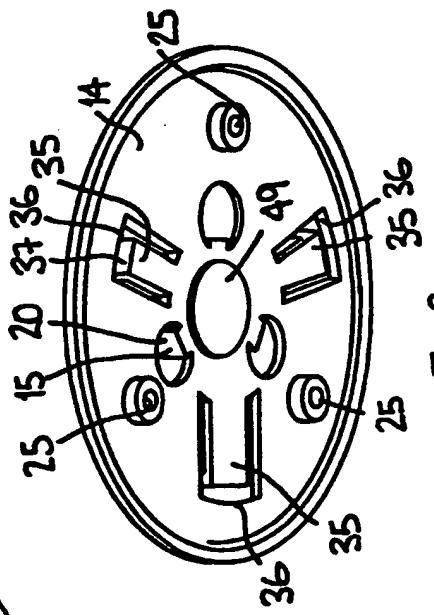


FIG 6

**"A disc record cleaning device"**

The present invention relates to a hand held disc record cleaning device, and in particular though not limited to a disc record cleaning device for cleaning a compact disc record.

5      In general, cleaning devices for compact discs can be categorised into two broadly different types. One type of cleaning device comprises a housing into which the compact disc to be cleaned is loaded. The other type is a hand held type, and is located relative to the centre of the compact disc and may be used to  
10     clean the compact disc in or out of the compact disc jewel box. The type of cleaning device which comprise a housing into which the compact disc is loaded, in general, comprises a spindle for locating the compact disc in the housing. A brush is located in the housing so that relative movement between the brush and the  
15     compact disc in the housing cleans the compact disc. The hand held type devices, in general, comprise a housing and a spindle extending from the housing for locating the housing relative to the centre of the compact disc. The spindle may engage an opening in the compact disc, or an opening in the centre of the  
20     jewel box if the compact disc is being cleaned in the jewel box. A brush carried on the housing cleans the compact disc as the housing is rotated around the spindle.

Such cleaning devices, both those which require the compact disc to be loaded into a housing, and the hand held type which require  
25     the housing to be located by a spindle in the centre of the compact disc, tend to be relatively complex, and in some cases difficult to operate. Additionally, in some devices, the pressure transferred from the hand of the operator to the brush is unevenly distributed over the brush. This in some cases, can lead to scratching of the compact disc.  
30

There is therefore a need for a hand cleaning device for a compact disc record, and indeed, other types of disc records

which is relatively simple to produce and operate.

- It is an object of the invention to provide a hand held cleaning device for a disc record which is simple to produce and to operate. It is also an object of the invention to provide a hand held cleaning device for a disc record in which the cleaning brush or other cleaning means is protected when not in use. A secondary object of the invention is to provide a hand held cleaning device for cleaning a disc record in which scratching of the disc record is avoided during cleaning thereof.
- 5        According to the invention there is provided a disc record cleaning device comprising a housing, a carrier means for carrying a cleaning means for cleaning the disc record, the carrier means being freely rotatably mounted in the housing, a cover means for covering the cleaning means when not in use, and a securing means for releasably securing the cover means over the cleaning means.
- 10      Preferably, the securing means comprises a magnetic securing means, and advantageously, the securing means comprises a magnet mounted on the cover means and a receiver member of magnetic material mounted on the housing or the carrier means, and preferably, the carrier means for releasably engaging the magnet. Thus, the cover means can be releasably secured and removed simply and easily, without the need for disengaging clips or other mechanically operated and engagable means.
- 15      In one embodiment of the invention the cover means comprises a base and a cylindrical side wall extending upwardly therefrom, the cylindrical side wall defining a longitudinally extending central axis and forming with the base a cleaning means accommodating recess for accommodating the cleaning means.
- 20      Preferably, a spigot extends upwardly from the base member for carrying the securing means. Advantageously, the spigot is coaxial with the central axis, and preferably, the spigot carries
- 25

the magnet.

In a further embodiment of the invention the housing comprises a top wall and a cylindrical side wall extending downwardly from the top wall, the cylindrical side wall defining a longitudinal central axis of the housing, which is co-axial with the central axis of the cover, the cylindrical side wall forming with the top wall a carrier accommodating recess for accommodating a portion of the carrier means therein, the carrier means being rotatable about the central axis.

10 In another embodiment of the invention a support plate is mounted in the carrier accommodating recess, the carrier means being rotatably supported on the support plate.

Preferably, the carrier means comprises a carrier member rotatably mounted in the support plate, and a carrier disc for carrying the cleaning means, the carrier disc being mounted on the carrier member, and being co-axial therewith.

15 Advantageously, the carrier disc is releasably mounted on the carrier member. Preferably, the carrier means carries the cleaning means so that the cleaning means extends proud of the housing. Advantageously, the carrier means carries the cleaning means so that the carrier disc and the cleaning means extends 20 proud of the housing.

In a preferred form of the invention, a locating means is provided for aligning the carrier disc with the carrier member. 25 Preferably, the locating means is provided on the carrier member and the carrier disc. Advantageously, the locating means comprise respective locating marks on the carrier member and the carrier disc, and preferably, the locating marks on the carrier member and the carrier disc comprise respective adjacent 30 relatively small protuberances. Preferably, the locating means are provided adjacent circumferential edges of the respective carrier member and carrier disc.

In general, the cleaning means is provided, and preferably, the cleaning means comprises a brush. Advantageously, the brush is of annular shape and is co-axial with the carrier disc, and is secured to one face thereof. Preferably, the brush is secured to  
5 the carrier disc by a water resistant adhesive. Advantageously, the brush is of a washable material.

In another embodiment of the invention the carrier member is tiltable about the central axis relative to the support plate. Preferably, at least three resilient engagement members spaced  
10 apart at intervals about the central axis co-operate between the carrier member and the support plate for transmitting downward pressure from the housing to the carrier member so that the downward pressure is relatively evenly distributed over the cleaning means. Advantageously, the resilient engagement members  
15 are equi-spaced circumferentially around the central axis and are equi-spaced radially therefrom. Advantageously, each resilient engagement member comprises a leaf member of resilient material extending from either the carrier member or the support plate, the free end of the leaf member being engagable with the other of  
20 the carrier member and the support plate. Preferably, the resilient engagement members are mounted on the carrier member and slidably engagable with the support plate.  
25

In one embodiment of the invention a handle is provided on the housing. Preferably, the handle extends upwardly from the top wall of the housing.

The invention will be more clearly understood from the following description of a preferred embodiment thereof, given by way of example only, with reference to the accompanying drawings, in which:

30 Fig. 1 is a perspective view of a disc record cleaning device according to the invention,

Fig. 2 is a cross-sectional elevational view of the cleaning device of Fig. 1,

Fig. 3 is an exploded perspective view of portion of the cleaning device of Fig. 1,

5 Fig. 4 is a perspective view of another portion of the cleaning device of Fig. 1,

Fig. 5 is an underneath plan view of portion of the device of Fig. 1,

10 Fig. 6 is an underneath perspective view of another portion of the cleaning device of Fig. 1,

Fig. 7 is a perspective view of another portion of the device of Fig. 1, and

Fig. 8 is a cross-sectional view of a detail of the device of Fig. 1.

15 Referring to the drawings, there is illustrated a hand held disc record cleaning device according to the invention indicated generally by the reference numeral 1 for cleaning a disc record, in this case a compact disc record. The cleaning device 1 comprises a housing 2 of injection moulded plastics material  
20 formed by a circular top wall 4 and a cylindrical side wall 5 extending downwardly from the top wall 4 and defining a longitudinal central axis 6. The side wall 5 forms with the top wall 4 a carrier accommodating recess 7 for accommodating a portion of a carrier means, which in turn, carries, a cleaning  
25 means, namely, two cleaning brushes 8 for cleaning the disc record, as will be described below. Three mounting members 9 of plastics material integrally formed with the housing 2 and located at a 120° intervals around the central axis 6 extend downwardly from the top wall 4 into the recess 7 for mounting a

circular support plate 10 in the recess 7 which is co-axial with the central axis 6. Three corresponding sockets 11 integrally moulded with the support plate 10 engage the members 9 for securing the support plate 10 to the housing 2.

- 5 The carrier means comprises a circular carrier member 14 of injection moulded plastics material. Three mounting tongues 15 extending upwardly from the carrier member 14 essentially form a shaft 16 which is freely rotatable in a circular opening 17 in the support plate 10. The shaft 16 is co-axial with the carrier member 14 and engages the opening 17 co-axially with the central axis 7. The tongues 15 are of a resilient plastics material and are integrally moulded with the carrier member 14 and terminate in returns 18 for engaging the opening 17 with a snap-fit action. Tapered lead-in's 19 are provided on the tongues 15 to facilitate assembly of the carrier member 14 with the support plate 10.
- 10 Surfaces 20 of the tongues 15 are of arcuate shape and define the shaft 16, the diameter of which is less than the diameter of the opening 17 to facilitate free rotation of the shaft 16 in the opening 17. Additionally, the diameter of the shaft 16 is
- 15 sufficiently less than the diameter of the opening 17 so that the shaft 16 is a loose fit in the opening 17 to facilitate tilting of the carrier member 14 about the central axis 6 relative to the housing 2, as will be described below.

- 25 A carrier disc 23 of circular shape and injection moulded plastics material for carrying the brushes 8 is releasably secured to and co-axial with the carrier member 14. Three engagement pins 24 of plastics material integrally formed with the carrier disc 23 extend from the carrier disc 23 for releasably engaging corresponding sockets 25 in the carrier member 14. The engagement pins 24 are located at 120° intervals around the central axis 6.

Each brush 8 comprise a woven backing member 27 of semi annular shape. A plurality of brush bristles 28 are woven into and

extend downwardly from the backing members 27. A self-adhesive coating (not shown) is provided on each of the backing members 27 for securing the brushes 8 to the carrier disc 23 to substantially form an annulus. The brushes 8 are washable, and 5 the self-adhesive coating is water resistant, thereby allowing the brushes 8 and the carrier disc 23 to be washed together.

Locating means, namely, locating protuberances 29 and 30 are provided on the carrier member 14 and the carrier disc 23, respectively, for facilitating alignment of the carrier disc 23 10 with the carrier member 14 for in turn facilitating alignment of the engagement pins 24 with the sockets 25. The locating protuberances 29 and 30 enable the carrier disc 23 to be readily easily assembled to the carrier member 14 after the brushes 8 and carrier disc 23 have been washed or are being replaced. In this 15 embodiment of the invention the locating protuberances 29 and 30 are embossed during injection moulding of the carrier member 14 and the carrier disc 23, respectively.

Three resilient engagement members, namely, three leaf members 35 of resilient plastics material which are integrally moulded with 20 the carrier member 14 co-operate with the support member for evenly transferring pressure from the housing 2 to the carrier member 14, and in turn the brushes 8. The leaf members 35 are equi-spaced at 120° intervals around the central axis 6 and extend into openings 36 formed in the carrier member 14. Lugs 37 25 extending upwardly at the free ends of the leaf members 35 at equi-spaced distances from the central axis 6 slidably engage the support plate 10 for providing a relatively even distribution of pressure over the brushes 8 during cleaning of the disc record. In other words, if during cleaning of a disc record, a user tilts 30 the housing 2 to one side about the central axis 6, or applies an extra pressure to one side of the housing 2, the relative tilting of the support plate 10 and the carrier member 14 is accommodating by flexing of the relevant leaf members 35 so that pressure from the housing 2 is evenly distributed over the

carrier member 14, and in turn the brushes 8. As mentioned above, the tilting of the carrier member 14 relative to the support plate 10 is accommodated by the loose fitting of the shaft 16 in the opening 17 of the support plate 10. The height  
5 of the lugs 37 is such that when the lugs 37 lightly engage the surface of the support plate 10, most of the carrier member 14 extends proud of the housing 2. However, even when the lugs 37 are depressed into the openings 36, and the carrier member 14 is  
10 engaging the support plate 10, the carrier disc 23 and the brushes 8 extend proud of the housing 2 to avoid any danger of the housing 2 engaging and thus scratching the surface of a disc record during cleaning.

15 A handle 41 of plastics material integrally formed with the housing 2 extends upwardly from the top wall 4 to facilitate gripping the housing 2 during cleaning of a compact disc record.

A cover means for covering and protecting the brushes 8 comprises a cover 42 having a base wall 43 and a cylindrical side wall 44 extending upwardly from the base wall 43. The side wall 44 forms with the base wall 42 a brush accommodating recess 45 within  
20 which the brushes 8 are accommodated. The side wall 44 defines a central axis which is co-axial with the central axis 6, and the diameter of the cylindrical side wall 44 is substantially similar to the diameter of the cylindrical side wall 5 of the housing 2, and both side walls co-operate for protecting the brushes 8. A  
25 spigot 46 centrally located and extending upwardly from the base wall 43 carries securing means, namely, a permanent magnet 48 for releasably securing the cover 42 co-axially with the housing 2. The permanent magnet 48 releasably engages a receiver member, namely, a receiver plate 49 of magnetic material mounted on the  
30 carrier member 14. An opening 50 through the carrier disc 23 accommodates the spigot 46 therethrough.

In use, to clean a compact disc record the cover 42 is removed from the housing 2 by pulling the cover 42 away from the housing

2, and disengaging the magnet 48 from the receiver plate 49. The housing 2, gripped by the handle 41, is then placed on the compact disc record with the brushes 8 resting on the compact disc record surface. The housing 2 is moved over the surface of the disc record, and in general, is revolved around the centre of the compact disc record. When cleaning has been completed, the cover 42 is again engaged in the housing 2. Should it be desired to replace the brushes 8, the carrier disc 23 is detached from the carrier member 14 by disengaging the engagement pins 24 from the sockets 25, and a fresh carrier disc 23 together with the brushes 8 bonded thereto is mounted on the carrier member 14.

During cleaning of a disc record with the cleaning device 1, the housing 2 tends to rotate relative to the carrier member 14, thereby permitting the handle 41 to freely rotate relative to the brushes 8. By permitting the handle to freely rotate relative to the brushes, there is little danger of the brushes suddenly rotating in a different direction or at a different speed which could be a potential cause of scratching the disc record with debris retained in the brushes 8. Additionally, any unevenness of the pressure applied to the handle 41 by the user or any tilting of the housing 2 relative to the carrier member 14 is accommodated by the leaf members 35. As well as the above advantages of the cleaning device according to the invention, by virtue of the fact that a cover is provided for covering the brushes when not in use, there is little danger of dust, grit and other debris collecting in the brushes when the device is not in use. A further advantage of the cleaning device according to the invention is that by virtue of the fact that it does not have to be located relative to the disc record being cleaned, the cleaning device according to the invention can clean substantially any size of disc record, whether a relatively large vinyl disc record, for example, a long playing record, or a compact disc record, or indeed, even disc records of smaller size. In other words, by virtue of the fact that the cleaning device does not have to be located in the centre of the compact disc, the cleaning device can be moved over the entire area of

- the disc record irrespective of the size of the disc record. A further advantage of the cleaning device according to the invention is that by virtue of the fact that its motion over the disc record is not restricted by being mechanically located in or relative to the disc record, should an isolated dirty area be encountered on the disc record, the cleaning effort by the cleaning device can be concentrated on such an area until the area has been cleaned.
- 5      While it is not essential, it is preferable that the compact disc record should be cleaned in the jewel box of the record.
- While a housing of particular construction has been described, other suitable construction of housing may be provided, and needless to say, any other suitable construction of handle may be provided. It is also envisaged that a cover of other shape and  
10     construction may be provided for covering the brush.
- While the cleaning device has been described for cleaning a compact disc record, it will be readily apparent to those skilled in the art that the device may be used for cleaning any other type of disc record.
- 15     While the cleaning device has been described as being of plastics material, the cleaning device may be of any other suitable material, and needless to say, any other suitable securing means may be provided for securing the cover of the housing.
- The invention is not limited to the embodiment hereinbefore  
20     described which may be varied in construction and detail.
- 25

CLAIMS

1. A hand held disc record cleaning device comprising a housing, a carrier means for carrying a cleaning means for cleaning the disc record, the carrier means being freely rotatably mounted in the housing, a cover means for covering the cleaning means when not in use, and a securing means for releasably securing the cover means over the cleaning means.
- 5
2. A disc record cleaning device as claimed in Claim 1 in which the securing means comprises a magnetic securing means.
- 10
3. A disc record cleaning device as claimed in Claim 1 or 2 in which the securing means comprises a magnet mounted on the cover means, and a receiver member of magnetic material mounted on the housing or the carrier means for releasably engaging the magnet.
- 15
4. A disc record cleaning device as claimed in Claim 3 in which the receiver member is mounted on the carrier means.
- 20
5. A disc record cleaning device as claimed in any preceding claim in which the cover means comprises a base and a cylindrical side wall extending upwardly therefrom, the cylindrical side wall defining a longitudinally extending central axis and forming with the base a cleaning means accommodating recess for accommodating the cleaning means.
6. A disc record cleaning device as claimed in Claim 5 in which a spigot extends upwardly from the base member for carrying the securing means.
- 25
7. A disc record cleaning device as claimed in Claim 6 in which the spigot is co-axial with the central axis.
8. A disc record cleaning device as claimed in Claim 6 or 7 in which the spigot carries the magnet.

9. A disc record cleaning device as claimed in any of Claims 5 to 8 in which the housing comprises a top wall and a cylindrical side wall extending downwardly from the top wall, the cylindrical side wall defining a longitudinal central axis of the housing,  
5 which is co-axial with the central axis of the cover, the cylindrical side wall forming with the top wall a carrier accommodating recess for accommodating a portion of the carrier means therein, the carrier means being rotatable about the central axis.
- 10 10. A disc record cleaning device as claimed in Claim 9 in which a support plate is mounted in the carrier accommodating recess, the carrier means being rotatably supported on the support plate.
11. A disc record cleaning device as claimed in Claim 10 in which the carrier means comprises a carrier member rotatably mounted in the support plate, and a carrier disc for carrying the cleaning means, the carrier disc being mounted on the carrier member, and being co-axial therewith.  
15
12. A disc recording cleaning device as claimed in Claim 11 in which the carrier disc is releasably mounted on the carrier member.  
20
13. A disc record cleaning device as claimed in Claim 11 or 12 in which the carrier means carries the cleaning means so that the cleaning means extends proud of the housing.
- 14.. A disc record cleaning device as claimed in any of Claims 11 to 13 in which the carrier means carries the cleaning means so that the carrier disc and the cleaning means extends proud of the housing.  
25
15. A disc record cleaning device as claimed in Claims 11 to 14 in which a locating means is provided for aligning the carrier disc with the carrier member.  
30

16. A disc record cleaning device as claimed in Claim 15 in which a locating means is provided on the carrier member and the carrier disc.
17. A disc record cleaning device as claimed in Claim 16 in 5 which the locating means comprise respective locating marks on the carrier member and the carrier disc.
18. A disc record cleaning device as claimed in Claim 17 in which the locating marks on the carrier member and the carrier disc comprise respective adjacent relatively small protuberances.
- 10 19. A disc record cleaning device as claimed in any of Claims 15 to 18 in which the locating means are provided adjacent circumferential edges of the respective carrier member and carrier disc.
- 15 20. A disc record cleaning device as claimed in any of Claims 11 to 19 in which the cleaning means is provided.
21. A disc record cleaning device as claimed in Claim 20 in which the cleaning means comprises a brush.
22. A disc record cleaning device as claimed in Claim 21 in which the brush is of annular shape and is co-axial with the 20 carrier disc, and is secured to one face thereof.
23. A disc record cleaning device as claimed in Claim 22 in which the brush is secured to the carrier disc by a water resistant adhesive.
24. A disc record cleaning device as claimed in any of Claims 21 to 23 in which the brush is of a washable material.
25. A disc record cleaning device as claimed in any of Claims 11 to 24 in which the carrier member is tiltable about the central

axis relative to the support plate.

26. A disc record cleaning device as claimed in any of Claims 11 to 25 in which at least three resilient engagement members spaced apart at intervals about the central axis co-operate between the carrier member and the support plate for transmitting downward pressure from the housing to the carrier member so that the downward pressure is relatively evenly distributed over the cleaning means.  
5
27. A disc record cleaning device as claimed in Claim 26 in which the resilient engagement members are equi-spaced circumferentially around the central axis and are equi-spaced radially therefrom.  
10
28. A disc record cleaning device as claimed in Claim 26 or 27 in which each resilient engagement member comprises a leaf member of resilient material extending from either the carrier member or the support plate, the free end of the leaf member being engagable with the other of the carrier member and the support plate.  
15
29. A disc record cleaning device as claimed in any of Claims 26 to 28 in which the resilient engagement members are mounted on the carrier member and slidably engagable with the support plate.  
20
30. A disc record cleaning device as claimed in any preceding claim in which a handle is provided on the housing.  
25
31. A disc record cleaning device as claimed in Claim 30 in which the handle extends upwardly from the top wall of the housing.  
32. A disc record cleaning device substantially as described herein with reference to and as illustrated in the accompanying drawings.

<b>Relevant Technical fields</b>		<b>Search Examiner</b>
(i) UK CI (Edition 5 )	A4F	
(ii) Int CI (Edition L )	G11B 3/58	A C HOWARD
<b>Databases (see over)</b>		<b>Date of Search</b>
(i) UK Patent Office		20 SEPTEMBER 1993
(ii) ONLINE DATABASE: WPI		

**Documents considered relevant following a search in respect of claims**

1-31

<b>Category (see ver)</b>	<b>Identity of document and relevant passages</b>	<b>Relevant to claim(s)</b>
X	GB 1490024 (METROSOUND AUDIO) Whole specification relevant	1
X	US 4947505 (HOOD) Whole specification relevant	1, 5, 6

SF2(p)

HD - doc99\fil001887

**Category****Identity of document and relevant passages**

- 16 -

**Relevant to claim(s)****Categories of documents**

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